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REMARKS

Claims 1, 3, 4 and 6 stand rejected under 35 U.S.C. §102(b) over Adrian et al., U.S. Patent No. 5,617,058). The Examiner will note that the independent claims of have this application have been amended to further define that, in the case of Applicant, a minimum pulsewidth is added to a opposing switching devices (cross the load) derived from a common reference voltage. This clearly distinguishes over the Adrian reference.

Broadly, whereas the Adrian system is *modulating* the input signal with a *bi-phase* compensating pulse waveform, Applicant's approach is not *modulating* anything since we just add a minimum pulsewidth to all pulses. It's a constant.

Adrian's use of *bi-phase* not only means adding a minimum pulsewidth, it also means applying a matching pulsewidth in the opposite direction (Figures 5, 6A, and 6B). These three figures show differential voltage across the input to the filter. The net effect is three states (high, low, and damped), which is why Adrian resorts to 'tri-stage' in claims 10 and above. By adding one to a number, then subtracting one, the result is a polarity reversal.

In contrast, when Applicant adds dual minimum pulsewidths, it's adding energy to both sides of the load, so the net effect is zero, or what Adrian would refer to as a 'damping' state. The differential voltage shown in trace 307 of Figure 3 does not show such a polarity reversal.

In reality, the Adrian approach is dependent on matching switching errors in the sourcing and sinking transistors, and in not really common-mode at all. Applicant's approach is reliant on matching switching errors in each opposing pair (such as both sourcing transistors, and both sinking transistors). In effect, Applicant is using four states (low/low, low/high, high/low, and high/high). Another way to look at is that Adrian's adding variable compensating pulses on one side of the load; we're adding fixed compensating pulses on both sides of the load.

Claims 1, 3, 4 and 6 stand rejected under 35 U.S.C. §102(b) over Chen et al., U.S. Patent No. 5,099,408. Chen resides in a system is provided for controlling a PWM inverter having three main circuit arms in which free-wheel diodes are connected in parallel to positive and negative side switching elements. The inverter takes three phase alternating current from an intermediate portion of the arms on the basis of a voltage supply of a direct current and an ON and OFF operation of the switching elements. The control system includes a circuit for detecting a zero-crossing point of the three phase alternating

current. A wave generating circuit generates a PWM wave at every main circuit arm, which changes the level thereof corresponding to ON and OFF operation of the switching elements and is inverted to each other in the positive and negative sides. An on-delay circuit delays a level change timing from ON to OFF of the PWM wave for a short circuit preventing duration. A compensation circuit compensates the PWM wave width of one phase in which a current opposite to other phases flows by expanding and contracting the width at the rate of two times as the short-circuit preventing duration. The expanded and contracted pulse width is added to the on-delay circuit, thereby controlling the switching elements of the inverter main circuit.

Given that in order to anticipate, a prior-art reference must teach each and every element of an invention as claimed, the Chen patent fails to anticipate under the same rationale as applied to Adrian. RCA Corp. v. Applied Digital Data Systems, 730 F.2d 1440, 1444, 221 USPQ 385, 388 (Fed. Cir. 1984). Based upon the foregoing, Applicant believes all claims are now in condition for allowance. Questions regarding this application can be directed to the undersigned attorney at the telephone/ facsimile numbers provided. Attached is a version showing the changes made to claims 1 and 4.

Respectfully submitted,

By: _____

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VERSION WITH MARKINGS TO SHOW CHANGES MADE

IN THE CLAIMS:

1. (Amended) In a switching amplifier of the type wherein one or more references are coupled to a load through gated switches controlled by a pulse-width modulated input signal, the improvement comprising:

adding a minimum pulse width derived from a common reference to [some or all of the] a pair of switching devices, one on either side of the load, [so as] to null the common-mode output presented to the load.

4. (Amended) An enhanced performance switching amplifier coupling an input signal to a load, comprising:

at least one electrically controlled switch coupled to each side of the load; and

a waveform generator operative to perform the following functions:

b) control the switches in accordance with the input signal, and

c) adding a minimum pulse width derived from a common reference to [so as] both electrically controlled switches to null common-mode output presented to the load.